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Elementary Particles and Fields Theory

Model for describing the production of Centauro events and strangelets in heavy-ion collisions

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AbstractÂ Â A phenomenological model for describing the production of Centauro events in relativistic heavy-ion collisions is discussed. The model provides quantitative predictions for kinematical variables, for the baryon number, and for the masses of a Centauro fireball and of its decay products. A Centauro fireball decays predominantly into nucleons, strange hyperons, and possibly strangelets. Centauro events in Pb + Pb collisions at the LHC energy are simulated for the CASTOR detector. The signatures of these events are discussed in detail.

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Deceased.

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ELEMENTARY PARTICLES AND FIE
Theory

Model for Describing the Production of Centauro in Heavy-Ion Collisions

S. A. Sadovsky, Yu. V. Kharlov, A. L. S. Angelis, V. L. Korotkikh, G. Mavromanolakis, and A.

Abstract — A phenomenological model for describing the production of [illegible] heavy-ion collisions is discussed. The model provides quantitative predic[illegible] for the [illegible] and for the [illegible] of a Centauro fireball and of [illegible] fireball decays predominantly into nucleons, strange [illegible], and [illegible] in Pb + Pb collisions at the LHC [illegible] simulated for the CASTOR de[illegible] events are discussed in detail. © 2004 MAIK "Nauka/Interperiodica".

INTRODUCTION

In this study, we present a Monte Carlo model for describing the production of Centauro events [1, 2] in relativistic heavy-ion collisions. The model is based on the phenomenological model formulated previously [3–6]. At first, a Monte Carlo model was applied to simulating the production of Centauro events and to exploring the possibility of detecting them in collisions of lead nuclei at an energy of [illegible] 5.5 TeV per nucleon by using the CASTOR detector, which was developed for the ALICE experiment [7] at the Large Hadron Collider (LHC) at CERN. Later on, it became clear, however, that the infrastructure of the CMS experiment [8] is more appropriate for conducting investigations of this type, and it was decided to perform relevant experiments within CMS.

Originally, the model for describing Centauro events was based on experimental facts that were derived from an analysis of cosmic rays. Experimentally observed features — such as the multiplicities, transverse momenta, and energy spectra of secondaries, along with their pseudorapidity distributions — made it possible to determine the evolution of a Centauro fireball, and this was used as a basis for calculating [illegible]

References secured to subscribers.